

SHORT CASES IN CARDIOLOGY

Intermittent complete atrioventricular block associated with typical atrioventricular nodal reentrant tachycardia

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A 30 year old woman with a three year history of intermittent palpitations presented to the emergency department following a typical episode. She was known to have β thalassaemia minor and took no regular medication. A 12 lead ECG on presentation demonstrated sinus rhythm with a PR interval of 112 ms but without evidence of ventricular pre-excitation. During examination, syncope occurred and transient asystole was observed on a bedside monitor. Subsequent ambulatory ECG monitoring demonstrated a single episode of asymptomatic complete atrioventricular block of 10 seconds duration occurring in the late afternoon, and preceded by Wenckebach PR interval prolongation (fig 1). Accordingly, a pacemaker (Medtronic Minuet 7108, Medtronic Ltd, Watford, UK) was implanted and programmed to DDD mode.

Palpitations continued following discharge, and during clinic follow up a non-paced regular narrow complex tachycardia with a cycle length of 260 ms occurred; this was terminated with intravenous adenosine. Her symptoms continued despite both oral verapamil and flecainide. An electrophysiological study was subsequently performed and a typical atrioventricular nodal reentrant tachycardia (AVNRT) with a cycle length of 328 ms was easily initiated following extrastimulus pacing (fig 2). Successful radiofrequency ablation of the slow pathway was performed, and AVNRT remained non-inducible following atropine and isoprenaline provocation. The patient remained in sinus rhythm following the procedure with a PR interval of 129 ms. Antiarrhythmic treatment was discontinued and at 18 months' follow up she was asymptomatic.

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Figure 2 Electrophysiological study indicating typical AVNRT following extrastimulus pacing. MAP, mapping electrode; HRA, high right atrium; HBp, proximal His bundle; HBd, distal His bundle; CSp, proximal coronary sinus; CSd, distal coronary sinus.

Discussion

Tritto and Calabrese recently described a young woman with paroxysmal first and second degree atrioventricular block, and AVNRT inducible at transoesophageal electrophysiological study.¹ To our knowledge, however, this appears to be the first report of intermittent complete atrioventricular block during sinus rhythm associated with AVNRT. Episodes of atrioventricular block were documented during waking hours, suggesting that high vagal tone was unlikely to account for these episodes, and the patient was taking no concomitant medication. This case illustrates

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Figure 1 24 hour ambulatory ECG demonstrating onset of complete atrioventricular block with preceding Wenckebach PR interval prolongation.

that although a patient may have impaired atrioventricular conduction, they may still be able to sustain AVNRT.

1 Tritto M, Calabrese P. "Double nodal pathway" as a common electrogenic pathway at the base of first and second degree paroxysmal atrioventricular block and nodal reentrant tachycardia. *Cardiologia* 1996;**41**:1001-4.

IMAGES IN CARDIOLOGY

Coronary artery fistula

A continuous murmur in a 10 month old boy with no medical history led to the diagnosis of a congenital coronary artery fistula between the left anterior descending coronary artery and the apex of the right ventricle. At 5 years old the child underwent unsuccessful surgical ligation of the fistula through a median sternotomy. Subsequent cross sectional and colour echocardiography showed a persistently dilated left anterior descending coronary artery (arrows) draining into the apex of the right ventricle, which was consistent with the findings on selective left coronary artery angiography. At 7 years old, percutaneous occlusion of the fistula was performed by an arterial approach under local anaesthesia. A soft detachable silicone balloon mounted on a 1.5 F catheter was placed

in the distal part of the leftanterior descending coronary artery. Inflation with iso-osmotic contrast agent was realised leading to complete occlusion and no electrocardiographic changes. The balloon was then released from the catheter. Fourteen months later, colour echocardiography confirmed persistent occlusion of the fistula with no residual shunt. This case illustrates both echocardiographic and angiographic aspects of congenital coronary artery fistula. Moreover, it shows different therapeutic options in the closure of congenital coronary artery fistula with initial failed surgical ligation but subsequent successful percutaneous occlusion using a detachable balloon. (Ao, aorta; LAD, left anterior descending coronary artery; LV, left ventricle; RV, right ventricle.)

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